

Zero Retries

Journal of

The Northwest Amateur Packet Radio Association

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The Future of WB6VAC-0 4-15-85

In the April issue of Zero Retries Budd, WB7FHC, wrote about my plans to experiment with a channel busy signal on packet radio. I would like expand on that and explain some of the details.

First of all, this project has multiple goals and will be done in steps.

GOAL 1: The overall goal is to create a true "CSMA" (carrier sense multiple access) system. This is the rule by which your TNC is designed to operate.

GOAL 2: To create a relatively cheap gateway system that does not require computers and does not require a change in any of our basic protocol or command structure. Even so, I expect it to be easily upgraded with an "LMU", if and when necessary.

Step 1-- To create the true CSMA system: First of all, let me back up for those of you who don't know how your "black box" works. As you have been told, your smart TNC listens before it transmits. This is CSMA trying to work. Note, however, that the "CARRIER" is not the RF one you automatically think of. It is the tone that is being sensed, thus your TNC will ignore a voice qso and may transmit at the same time.

Don't forget that as HAMS it is your responsibility to be sure the frequency is clear before you xmit. The AEA and GLB boards have COR inputs and can correct this problem.

It might be more correct to call the system TSMA (tone sense multiple access). And as long as every station is within simplex range, that is, no one uses digipeaters, it all works fine. But in the Puget Sound area, we can't live with these restrictions.

I will try to use the highest and best location possible for the coverage of our wide area LAN. Currently, that as you digipeat through WB6VAC-0 you do not have CSMA (the vital part). With more than one user, you usually get a mess. To create a true CSMA system we will make use of two frequencies, just as a voice repeater does. But it will not be a "REAL TIME" repeater.

This distinction MUST be understood. Packet uses what is called "STORE AND FORWARD". That is, the message is received, validated for accuracy, and if addressed for your station, it will be displayed or passed on, depending on the message. This is sort of what a telephone answering machine does.

To make CSMA work, we must "MARK" the output channel busy with a tone anytime the TNC is receiving something.

Going one step further, we also mark the channel busy anytime the input "COR" is active. This tells you the channel is blocked by a voice qso or intermod etc.. And, last but not least, we mark the channel anytime the TNC is busy and can't receive a new message. If all of this is done, then the system will work correctly. Your TNC will automatically follow the rules in spite of the operator.

Now to the problem of needing two frequencies. There are

basically no 2 meter pairs around; and because all of our "allocated" packet channels fall between 144.09-145.0-9 MHz, the repeater pair would have to be in the 147mhz end of the band to accomplish part 2 of my goals. Thus, I'm going to put up a wide band split; 144.09-145.09 MHz as inputs, and 147.6 as the output, from Green Mountain (home of 146.88).

As we get into part 2 of the project, you will see the need of this wide band split. Don't panic because your radio can't work this split. The primary goal of this system is to set up the "WIDE AREA LAN MASTER CONTROLLER".

If a person chooses to set up on the wide band split, they could send data without the fear of a massive collision. The plan is to let the other users use the other packet channels as small local LANs, and, when necessary, they can link through the transparent gateway to talk to users on other LANs.

Goal 2--- The "transparent" gateway: If you remember, the second goal was for a simple and relatively cheap gateway. For you newcomers a gateway, or bridge, allows you to talk between various LANs in various areas or on other frequencies. An interconnect is a valid term.

As we have it now, the gateway to 220 requires a connect to the WB7DCH BBS, executing a series of commands and hopefully a connection is made. This takes the BBS and gateway out of service to other users.

Under my plan, this would change. Many of you have dealt with voice repeaters where there is an interconnect or cross band setup- a gateway if you will. You talk on 2 and the other person is on another band or repeater. Now apply this to packet. Suppose my TNC hears on 145.09 or freq A, but the xmit part is tied to a 220 transmitter. Another TNC hears on the 220 freq and transmits on the 2 meter side. Both TNCs have the same address (WB6VAC-8), for now. You could now carry on a packet QSO via VAC-8 just as you do with VAC-0.

Now we have the cheap gateway--no computer is needed, and no middle-man connects or commands to use, just a simple digipeat.

Now the next step. Suppose we want to connect the WN7ANK-5, 145.01 MHz digipeator to the MASTER CONTROLLER. The 145.01 machine uses simplex radio and a single TNC on Brass Mountain. At this site we add a receiver on 147.6 and another TNC. The new receiver will hear 147.6 but share the 145.01 transmitter. To protect both TNCs from colliding, the 147.6 TNC will have an input that normally monitors the COR to see if the system is busy. Now we use it to check out the transmitter PTT line also. If the system isn't busy, the the 147.6 receiver will pass its data on 145.01, BUT only when addressed as a digi in the via command. Thus you won't see all the garbage from another channel. This is now being done in part on the 220 network.

Note: that because 147.6 is so far from 145.01 that we should be able to do without using cavities.

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cmd:ABOUT THIS ISSUE

(CHANNEL BUSY: continued from page 1)

A lot of time has been put into this issue of Zero-Retrieves. We hope you will find the contributions of so many people both interesting and informative.

The feature story on page one by Doug Lux, WB6VAC, explains in more detail a plan that was first described in the last issue that will mark the channel busy and make the packet networks operate more smoothly. Doug answers the question of why this scheme is better than a simple duplex repeater. Pay close attention to the idea that he can come up with a linking system that does not require a computer.

John Gates, N7BT1 (our executive vice president and the man from AEA), offers us two interesting articles. On page 6 he describes the new TAPR TNC-2. And on page 3 he shares with us some of the fun he has been having with the Publicity Committee.

TAPR isn't the only one with a new TNC. From the pages of the FADCA>Beacon we have lifted an article about Kantronics' new TNC called: "Packet Communicator." Look for this reprint on page 7.

Tom Hogan, WB7DCH, explains the new version 9.0 software that is running in the MailBox these days on page 4. And on the same page, John Hays, KD7UW, fires off a few shots about the technical committee.

Plans are already underway to present packet radio at the upcoming Tacoma Ham Fair. Peter Dahl, WA7FUS tries to stir up some enthusiasm on page 5.

As always, feel free to copy any or all of this newsletter to share with others. We ask only that any reprinted material will credit both the author and NAPRA's own "Zero-Retrieves".

HAPPY PACKETS!

PACKET FAMILY PICNIC ON JULY 13

HOW 'BOUT BRINGING THE FAMILY OUT INTO THE COUNTRY FOR AN OLD FASHIONED POT-LUCK PICNIC? INSTEAD OF THE USUAL MONTHLY MEETING, BUDD AND HIS FAMILY HAVE OFFERED THE USE OF THEIR FARM SOUTH OF GIG HARBOR FOR THIS GATHERING. PLAN ON BRINGING FOOD, FAMILY, SWIM SUITS, AND GOOD CHEER. THE GUYS ON THE 220 LAN PLAN ON WHOOPIN' THE 2 METER FOLKS AT HORSESHOES! WATCH THE MAILBOX AND CHECK INTO THE RAG CHEW FOR MORE INFORMATION AND DIRECTIONS!

Now in this example, user "A" on freq "A" (the input to the wide band split--let's say I use 145.03)--sets up his connect (in TAPR talk) "c user b v wb6vac-0,wn7ank-0". When he sends his packet, it goes to vac-0 and is digipeated on 147.6. The 7.6 receiver on the 145.01 digi is addressed as wn7ank-0 so it digipeats the message to 145.01 to user "B" and the link is only up long enough to pass that packet.

Now the reverse path... no more changes needed to the 145.01 site. At the master control site we add a receiver on 145.01 and a TNC. It is also connected to the 7.6 transmitter with necessary logic to keep two TNCs from talking at once. Now user "B" acknowledges his connect request and his TNC automatically returns by the same route and back out on 145.01 which is heard by the WB6VAC-0 TNC in the MASTER CONTROL and is digipeated to 7.6 and to user "A's" TNC, thus making the full loop. As you can see in this method, all of the packet channels can act as inputs to the MASTER CONTROL system, thus bridging any local LAN to any other because the output is a long way off at 7.6 and no cavities. Remember I said you would see the need for the wide band split?

This is relatively simple. Now let's go to the next step. At the master control we modify the TNC just a little and add a 6 meter, 220 and 450 data pair. In each band they become their respective MASTER CONTROLLER. To link these together we follow the same idea, but to save costs I modify my TNC just a bit, but I don't alter its operation or protocol in any way.

Your TNC allows your call to be used 16 times...WB6VAC-0 through WB6VAC-15. Suppose I make the TNC decode the SSID number (0-15). If bit 4 (anything above SSID 8) is ON, the TNC gives me a 3 line binary output. This output feeds one chip that decodes it to give me 8 PTT lines. So by addressing via WB6VAC-8, my new PTT line can go to, say, a 220 transmitter, VAC-9 could go to a 450 transmitter and so on, all from one TNC.

So to keep the CSMA working, I'm still marking the 7.6 channel busy so everyone still plays the game by the rules.

This is a rough start as to what can be done. Virtually any connect between our local LANs can be done with only 2 digipeats. Of course, at anytime we can branch out to other networks in the same way. Thus, the reach of 7 digipeats could be considered to be our true "local" network.

It's not fool proof and can't be made so, so long as people are involved; but it's the easiest and cheapest and can be done right now if we want to. The big key is the true CSMA channel; with that, we can connect almost anything to anything, and that leaves lots of room for playing.

So there you have it, in a not-so-small nut shell. Feel free to ask questions.

Doug Lux, WB7DCH

cmd:Link state is: CONNECTED to N7BTI-1 VIA N7BTI

THE FUN OF IT ALL

Here I sit recollecting the fun times some of have had trying to convey the excitement we've had learning packet, using it and thinking about all the neat things yet to come.

We've been out at various other clubs, with demo setups, a chalk board, and a bunch of expectant folks - some there to learn what the funny sounds they are hearing, some because it's a social situation and the talk is incidental, some already knowledgeable about many aspects of packet and thirsting for every new bit of information they can get, and some just THERE.

In the end analysis, we in NAPRA are in it for the growing experience, for the thrill of learning something new, for the fun of teaching someone else, for the kicks of experimenting, and so forth. We'll be able to do all of the aforesaid only to the extent we have resources - money and people to bounce ideas off of and people to help. That's where the recruiting function comes in!!

The so called PUBLICITY COMMITTEE is a rather loosely structured group consisting of (pardon any forgetfulness on my part) KB7DY, N7BTI, WA7ETE, WA7FUS, KB7DZ, W6IZK, and WB7FHC. We are always interested in any help we can gather - let me know if you are interested. We have presentations to make to the Issaquah ARC, the Seatac Rptr Group in June, the Island County ARC, the Osborne Computer User's Group, and the Seaside OR ARRL Convention. I enjoy doing these things as do the other guys, but we don't want to get tired. It's a truism that 5% of the club folks do 90% of the work, but does it have to be that way?

We have also been active in getting those knowledgeable in packet in other areas to help out. I am in the lucky position of working with AEA which makes a packet board. As such, I get a lot of letters and calls and am able to point people who want to learn about packet towards others who know for example, Dave Pederson is quite active in UPRA and is helping out some new packeteers in Boise; some new guys in Medford are looking to the northern Oregon folks; the Las Vegas people are talking with Don Simon in San Francisco, and so forth.

For the most part the demo equipment has been a couple TNC's linked audio to audio along with a computer. There is a speaker hooked up at each TNC and the audience can hear the packets braap back and forth. If the speaker describes what is going to be heard, and what the packets are for, it makes for a meaningful demo. The screen of most any computer is too small for the group to read during the presentation, so one usually describes what is on the screen as the demo progresses.

The talk is generally not very technical, and is limited to the main "feature-benefits" of packet (hi speed/error free/channel sharing/store and forward path extension and

steering/selective call/other operator doesn't have to be present-message taking/ etc) Most of the audience isn't very aware of concepts like RS232, FSK, bytes, and so forth, so it is very important to observe the main element of communication - namely checking with the audience periodically as to where their minds are - are they still struggling with the last thing you were talking about or are they right with you?

There are lots of things we can do besides give talks. We have just scratched the surface. Lots of people to talk to - clubs exist in areas like ham radio, computers; there are groups doing worthwhile things like bikeathons, parades and so forth that would like to hear about what we can do; search and rescue, emergency management oriented folks are interested; I'll bet the TV news shows would do a biper also !! How about putting on demos for existing HF nets in the Northwest? Ever been in a shopping mall brapping away to your girlfriend with a friendly ham standing next to you showing you how? How about putting on a "BraAPRAfest" as a part of the Radio Club of Tacoma's big do at Pacific Lutheran University late in the summer? FUS and I are interested.

The FADCA guys are doing a similar thing June 15 called the Southnet Packet Conference. They'll have rooms in the school where you can bunk; it will be at the U of Florida Student Union building. On the agenda are a workshop full of equipment for testing your packet gear, several talks by local packet dignitaries on various interesting topics, a tour of the local packet station (you can operate if you bring your ticket), satellite operation live, an intro to the RLI mailbox, intros to several protocols including the ISO OSI standard, demos of GATOR-1 linking hardware at 9600 baud, and a seminar by Howie Goldstein on his new electronic conferencing system. Can we top that? Who's gonna help?

The ARRL and TAPR are going to make another video tape - primer. And CITS has made a tape that was very good I thought. We have an interesting locale here geographically and are developing some unique solutions to the terrain problems (specifically VAC's mark-channel idea). Wouldn't it be interesting to feature something like that? ETE has a burning desire to do something in the area of SSB meteor scatter. Lots of stuff to talk about - we NEED TO PIONEER things and then strut our stuff !! it's all called PUBLICITY !!

I have always found that the thing that most people are interested in is in "staying alive" - that's to say growing as an individual - learning new things - being able to teach them to others. Won't you share the fun with us? We're having a ball !! It really gives you a glow when you have finished the evening and get a round of applause and know that you have "hooked" a few new converts !! And those of you who have done it know you have done a job well!! ENJOY - de N7BTI

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-3-

REMEMBER -

3885 +/- Khz.

NAPRA Regional Packet Radio
RAGCHEW/NET

2000 Hours Pacific Time
Thursday Even
(1 hour before 145.33 Mhz. NET)

cmd:Packet Fragments...

...Ever notice when tuning HF packet that it sometimes seems to jump from lower sideband to upper sideband and back again? This drives the old RTTY types wild! The reason for this is that, unlike RTTY, packet radio doesn't use tones for marks and spaces. In packet radio, a mark is the first TRANSITION in a packet and it doesn't matter whether its a high-to-low or a low-to-high transition. What this means is that any packet having an odd number of bits, when repeated, will start with the opposite tone each time! A good example of this is a connect request or a packet containing only a single carriage return ...There may be a Canadian MailBox in the near future. As a result of a QSO with Rich Chycoski, VE7CVS, of Coquitlam, BC, I sent a copy of the WORLI software north. Rich has an operating Xerox 820 and 220 gear. He is planning to implement a bridge between the AX.25 and V.2 protocols. Good Luck, Rich! ...Why is it that GLBs can't seem to take rejection? The TAPR, AEA, and the Heath all quit sending connect requests when they get and busy response. The dumb old GLBs just keep banging away...

New MailBox Information

We are now running version 9.0 of the MailBox/GateWay software. It has a lot of new features, such as greeting you by name, if I know your name. Be sure to download a copy of the new DDC.TNC. There are quite a few changes and additions.

There are four new qualifiers for the List command. You all know about "LB" to list only bulletins, and "LM" to list only your mail. There is now "L)", "L<" "LL" and "LN". "L) WB7DCH" will list all messages to WB7DCH. "L< WB7DCH" lists all messages from WB7DCH. So... to list all messages dealing with sale items, simply enter "L) 4SALE". "LL n" lists the last "n" messages. "LN" lists any new messages since your last login.

A lot of users don't seem to know that messages can be killed by either the sender or the addressee. If you mess up someone's call or the text of the message you are entering, you can kill it and reenter it. You should kill and reenter ANY message on which you have messed up the addressee's call or you won't be able to tell from the "R" column whether or not he has read your message. (The "R" column contains either a "Y", "N" or "F" to indicate that the message has been forwarded.) If a message you send disappears, it means that it was either killed by the addressee or me, and I don't make a habit of killing other folks' messages unless they lay around for over 14 days.

NEW POLICY... Addresses other than valid amateur calls should be limited to NAPRA, 4SALE, 4TRADE, WANTED, BOARD, TECH_C, and PUB_C. Your friendly SYSOP will in the future indiscriminately kill all messages addressed any other way. Items for sale should be limited to amateur gear and computer stuff.

Tom Hogan, WB7DCH
Director at Large, NAPRA

cmd:TECHNICAL LINE

Another month has passed and I contemplate the many activities which await our attention this summer. We will soon have a digipeater on 145.010 Mhz. on Grass Mountain near Enumclaw. Plans are underway in Tri-cities for a digipeater as well as one at 145.010 Mhz. on Mica Peak (Idaho/Washington) border.

All of these systems are the result of the hard work of a very small group of people who are dedicated to the development of Packet Radio in the Northwest. I applaud them in there efforts.

There is no OFFICIAL charter for the Technical Committees so I would like to present my perspective of their purpose(s):

1. To provide a place for the members of the Club to turn in times of need for Technical Assistance. TNC kits, antenna raising parties, Radio Repair and Calibration, software reviews, etc. to name a few.
2. To review RF and Linking Plans for accuracy and completeness before presentation to the Club for general review and approval.
3. To foster the development of new hardware and software by the membership. To review designs and test prototypes. To supply added expertise and possible financial support to projects being developed by members.
4. To co-ordinate the development of LANs and WANs.
5. Finally, to act as a general technical support group to the amateur community which we serve through NAPRA.

Many people look to the committees to work miracles of technological development while they sit in their easy chairs waiting for it to come about. I for one have a stack of software projects I would like to get to for Packet Radio, but find myself spending a good share of my time trying to keep what plans that have been made from being subverted by others who think we should be going "this direction or that direction", and trying to get information from those who are working on plans and projects. Administrative details in the organization are burying some of our best technical people, and the only cure is for people to quit complaining, to come up with good ideas and projects, and to work on them using the TECHNICAL COMMITTEE as a resource rather than expecting the committee to do everything for them.

I am always open to input from anyone in the club, but please bring a suggestion for improvement or a plan for action. Do not come to me and say, "Why don't we see more coming from the committee". YOU ARE THE TECHNICAL COMMITTEE so if you want things to happen, then MAKE THEM HAPPEN!

I hope that I have not offended anyone, and I am sorry if this sounds negative. I am very enthusiastic about Packet Radio and I want to see NAPRA become a major force in the PACKET COMMUNITY, but that takes both individual ingenuity and team effort. So next time someone asks you what has NAPRA done for you, ask back what have you done for NAPRA?

John D. Hays, KD7UW
Technical V.P., NAPRA

cmd:Link state is: CONNECTED to WA7FUS VIA N7BTI

It seems to me that now is the time for NAPRA to get its act together so that we can take advantage of the biggest and most widely publicized amateur radio event in the Northwest. I am speaking of the annual Radio of Tacoma Hamfair. This year it will be held on August 17 and 18.

This event has, in recent years, drawn over 1500 amateurs from Washington, Oregon, Idaho, British Columbia and a few from other areas. It has also drawn many of the major manufacturers of amateur radio equipment of all kinds.

We should decide now how we want to participate in this event. Do we want to give presentations about packet for beginners and the more advanced user? Do we want to sponsor seminars? Do we want to have demonstrations of packet with an in-house bulletin board/mailbox system? We might reserve a room and have a well publicized regional NAPRA meeting. We might, if members wanted to work on it, rent flea market tables and sell neat junk that members and friends of NAPRA want to donate to sell with profits going to help support the acquisition of specialized linking and LAN enlargement equipment.

I have a dual purpose in suggesting NAPRA's involvement in Hamfair. I am, and have been for a number of years, a member of the Radio Club of Tacoma. RCT puts on a quality event which over the past few years has become more like a convention than just a hamfest. We of RCT have taken on some projects for which money needs to be raised. We of NAPRA could certainly use a forum, such as a convention of hams, to promote packet radio and to gather others of similar interests and to find all kinds of neat junk and to raise money for our group. So, lets talk it up now and decide how this event fits into our mission.

Peter Dahl, WA7FUS

cmd:PREZ SEZ ...

Well, summer is almost upon us and a ham's fancy turns toward hill top sites - that is, if he is involved with packet radio. The snow is melting in the hills allowing access once again to these sites. Now is the time to actively start doing something about interlinking to areas beyond our own local area net (LAN). Work is afoot around the country to link areas together on 145.01 MHz. This will mean very limited activity, i.e., rag-chewing, on that frequency if things are to work. It is not perfect, but at least it is an attempt to start linking areas together. The key to this is hill top sites that can hear each other. This seems to be the hardest part in the interlinking game.

Once these sites are acquired, then they can be used for the next upgrade. The basic idea is to use one hill top site as a linking station with a TNC on two bands, for example 145.01 MHz and the 220 MHz band. This will take the traffic loading off the local linking access frequency for traffic passing thru the area. There are many ideas in the works around the country on how to make linking station packet equipment. They mostly use surplus Xerox 820-1 computer boards with modifications or enhancements. Their theme is to use what is at hand and to do it cheaply. This is all taking place at level two since the magical level three equipment is some ways off.

However, activity is mounting in many areas that will help spur interest in linking, yet a lot of work is still to be done. On the local level, additional hill top digipeaters need to be put up as an alternate place to move to in order to ragchew, etc. Think about it.

We are a geographically diverse group, and it is a long way for some to come to club meetings. In the future the business portion of the meeting will be extremely short in order to leave as much time as possible for people to get together to coordinate and work on projects. I for one have many areas that interest me and will be seeking others to work with me on them. Stick around after the meeting and chat. It could be fun.

Dennis Goodwin, KB7DZ
President of NAPRA

Membership Application Request Form

Name _____ Callsign _____ Class _____
Address _____
City _____ State _____ ZIP _____
Phone _____ (Days) _____ (Eves) _____
May we publish the above information or a part thereof? _____
Comments _____

_____ I have enclosed ~~\$15.00~~ annual dues. _____ I have a packet station
_____ I will send dues with Application. _____ I am on the Air.
Send with a SASE (legal size preferred) to:

NAPRA
c/o Budd Churchward, WB7FHC
13304 131ST STREET KPN
Gig Harbor, Washington 98335

*dues: \$7.50 for
second half of
the year!*

cmd:TAPR NEW TNC - DAYTON INTRO - 4/28/95

TAPR has discontinued the original TAPR board and sold the balance at \$160. I understand they got rid of a hundred or more at this price. They are now out of stock.

They have introduced a "TNC-2", which will be shippable late summer and will be a kit for about \$180.

My information about it has it as being in the same case style the Kantronics UT U. The board is 7.5 x 4.5 inches. It runs off DC and the chips are available in CMOS reducing the current drain. The command set is the same as the previous board but some will be deleted. The software will be per ARRL AX.25 Version 2.0 and will be essentially the same as the new Version 4.0 for the old TAPR board. Version 4.0 will be released for the old TAPR board at essentially the same time as the TNC-2, namely late summer.

There are 16 TNC 2's out on beta test now. The chip count is 21. The principle chips are the 180, 2764 prom, 6116 ram, Zilog SIO, and there is battery backup. There are a bunch of TTL glue parts.

There is no prom programmer port or programmer, and no calibrate program.

The software is per version 2.0 per the ARRL standard. There is no level three. There is a modem disconnect capability. And there are some DIP switches to do the ABAUD and HBAUD commands.

FOLLOWING ARE THE DETAILS ON THE TNC 2:

- FULLY COMPATIBLE WITH EXISTING TNC
- OPERATION AT 9600 BAUD WITH MODEM BYPASSED AND USING EXTERNAL MODEM.
- OPERATION AT 56 KBAUD IF YOU HAVE THE RIGHT EXTERNAL MODEM
- CPU IS CMOS 180: CLOCK IS 2.4576 KHZ (OPTIONAL 4.9152):16K OF 2764 PROMS: 8K OF 6264 RAM WITH LITHIUM BATTERY BACKUP.
- HDLC DONE IN HARDWARE ALLOWS FULL DUPLEX AND/OR NOT MISSING ANY INCOMING PACKETS WHEN THE TNC IS SERVICING THE TERMINAL.
- MODEM SAME AS THE OLD TAPR EXCEPT LOW PASS STAGE IS PASSIVE INSTEAD OF ACTIVE CONFIGURES FOR 1200 OR 300 BAUD SAME WAY THE OLD ONE DOES.
- FRONT PANEL: NO CONTROLS- LEDS ARE: DCD, CONNECTED, POWER, STA (PACKET STATUS).
- REAR PANEL: POWER SWITCH PUSH PUSH; 9-15 VDC INPUT CONNECTOR; 8 POSITION ROCKER SWITCH CONTROLLING HBAUD AND ABAUD; DB25 FOR SERIAL PORT/232; AND A DIN PLUG TO THE RADIO.
- CHANNEL BUSY INPUT ON DIN PLUG FOR RF CHANNEL COR INPUT.
- THE STA LED (STATUS) TELLS YOU WHEN YOU HAVE UNACKED PACKETS IN YOUR BUFFERS.
- POWER IS ABOUT 260 MA; CMOS CHIPS CAN REDUCE IT TO 120 MA.
- THE PROM PROGRAMMER, PARALLEL PORT, DEBUG ROUTINE, CAL PROCEDURE, ETC ARE GONE.
- HOWEVER, THE COUNTER STILL EXISTS TO ALLOW SETTING TONES USING THE LEDS.
- THERE IS A TUNING INDICATOR SOCKET - IT REQUIRES SOME EXTERNAL CIRCUITRY.

(continued next column)

- SOFTWARE IS COMPATIBLE AND INCLUDES AN ENHANCED MONITOR MODE - DON'T KNOW WHAT THAT IS.
- POWER SUPPLY IS A SWITCHER.
- I REMEMBER THAT THE STATE MACHINE IS A 2116.
- USES 180 FAMILY SIO.
- THERE ARE 21 CHIPS.
- THE TWO PROMS ARE NOT FULL (ROOM TO GROW).
- WATCHDOG IS STILL 556.
- I BELIEVE THAT THERE IS A "J" COMMAND IN IT THAT RECALLS RECENT CALLS HEARD.

This material was extracted from those of us who went to the Dayton Hamfest, the flyer that TAPR published and had at the show, and my memory of conversations with TAPR folks.

I am happy to see the price-performance curve following its usual slope. Technology usually has about an 80% learning curve. TAPR has proved the point. Now that all the manufacturers are in the biz, we need to concentrate on networking topics and increasing the size of the movement.

John Gates, N7BTI

Executive Vice President, NAPRA

NAPRA Board of Directors:

The following people serve us all and have contributed a lot to make NAPRA work. These are the elected officers of our association. Others have also worked hard. Support NAPRA.

KB7DZ	Dennis Goodwin	President
N7BTI	John Gates	Executive Vice President
KD7UW	John D. Hays	Technical Vice President
WB7FHC	Budd Churchward	Secretary/Treasure
		Editor: Zero Retries
WB7DCH	Tom Hogan	Director at Large

NAPRA Scheduled Meetings:

REGULAR, GENERAL MEETINGS ARE HELD ON THE SECOND SATURDAY OF EACH MONTH AT 1 PM. MEETING PLACE ALTERNATES BETWEEN THE RADIO CLUB OF TACOMA CLUB HOUSE IN TACOMA AND THE BOEING BEARS' CLUB HOUSE IN RENTON (CHECK THE MAILBOX OR THE THURSDAY 9 PM NET ON 145.33 TO FIND OUT WHERE).

BOARD MEETINGS (OPEN TO ALL) ARE HELD EVERY THIRD WEDNESDAY OF THE MONTH AT THE OMNI RESTAURANT IN FEDERAL WAY.

THE KANTRONICS PACKET COMMUNICATOR

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Kantronics has created a new packet terminal node controller that makes getting on packet as easy as getting on RTTY. The unit is ready to use, easy to operate, and compatible with existing packet units. The new hardware design also includes features not found on other packet controllers, including a 1200 baud radio modem, transmit/receive control of square-wave test tones, and both Bell 103 and 202 tones. In addition, the unit is truly compact, measuring 1.9 by 5.9 by 8 inches in the "Kantronics" style extruded aluminum case.

A 6803 microcomputer is the heart of the unit. Data is fed from a 7910 World-Chip modem, your computer, and the EPROM, RAM, and NOVRAM memories feed it.

All control is under the supervision of a program in the EPROMs. In addition to responding to most of the same commands that other TNCs respond to, such as MYCALL, the KPC has several added commands: BELL, EQU, and CAL. The BELL command is used to configure the modem for Bell 103 or 202 tones. The 103 tones are used at 300 baud. The EQUalize command is used to adjust the modem at two different levels for the incoming AFSK tones. The CALibrate command is new, different from other TNC calibrates. It is used to transmit or receive a square-wave at 1200 baud. This tone transmission is very handy for use by two stations having to tune to each other or for other tests.

Another plus of the KPC is that it is directly compatible with either RS-232 or TTL levels, thus making it unnecessary for you to get a TTL to RS-232 converter if you are using a Commodore-64! The unit is shipped from the factory with the RS-232/TTL jumper set in the RS-232 position. You can change the jumper if you like; the circuitry is already in the box!

THE OTHER SIDE OF THE MAILBOX

cmd:link state is: CONNECTED to WB7FHC VIA N7BTI

The 220 digipeater on Grass Mountain has been operating on split frequencies for several weeks now. Using a normal repeater pair it operates on 222.96/224.56 MHz. Although it is hoped to have a full duplex repeater at this site some time this summer, we are currently running store and forward with an AEA TNC (N7BTI-0) and a Midland 13-509 transceiver.

The frequency change has solved the intermod problems with the 220 voice repeater on the same mountain (see April issue); but because your TNC hears only the digipeated packets coming off the mountain, collisions are common. We feel that the repeater will eliminate this problem.

Current plans are that when the bugs are out of the receiver the repeater will go up on the hill, but the TNC will still be running as an outrigger to the system. Users will have the option of connecting "directly" to others in the LAN with the repeater providing real time rebroadcasting of the packets or they may choose to digipeat through N7BTI as we do now. In the latter case, the repeater will mark the channel "busy" with the audio repeated packet; but the TNC anticipating the traffic will wait for the repeated packet that follows.

This dual purpose site will allow for those who live in marginal areas where the degradation of audio repeated tones result in too many retries.

..... de Budd

IN THE MAILBOX

Msg# T R Size To From Date Title

442 B N 734 NAPRA KB7G 850424 TI Packet & FD

I talked to TIZCAH on AMTOR today, and Jose filled me in on packet activity in Costa Rica. He says there are five known stations active on 145.10 in the country. Jose has just completed a TAPR TNC, though he is having problems making it talk to a Commodore 64.

I had a chance to look at some of the ARRL Contest Advisory Committee's deliberations on packet radio in Field Day at the Fresno DX convention. It may be possible that message handling (done for bonus points) will be encouraged. I for one know that I'll be on this June, and hope that everyone will leave their TNC's on. From my favorite FD site at 3500' in the Olympics, it may be possible that packet could be interesting for those who make an effort to get on.

..... de Brett, Edmonds

Msg# T R Size To From Date Title

52 D Y 1709 NAPRA WA7ETE 850510 Wake Up!

We have an organization put together lets use it !! There are a few individuals who have put together a very good LAN. We as a group have, banged the hell out of their equipment, got together a couple times a month to talk about how we enjoy their machines, and talked about the future. The group has a responsibility to those individuals and ourselves as a whole. Does the organization feel those individuals are millionaires with lots of time on their hands? We cannot, and should not, rely on total individual efforts, funding and time to get things done. If we want to be a viable part of what's happening, we better put the organization to work and get to where it is happening.

These thoughts came to mind when I connected to WB7DCH via WB6VAC, saw version 9 software, and asked myself what has the group done for them? There should be no reason for DCH to be talking to WORLI via the telephone. How do you think the AEA guys feel when they tell their customers "Yes, there is HF activity just about everywhere but here". Is the organization going to let the current 2mtr and 220 LAN updates be bore totally by individuals? I'm not suggesting support for every and all projects, that's foolish, but I am suggesting we pool our resources and get going with what's happening in the real world.

There is probably enough unused equipment in garages and basements to get us on HF, and what's wrong with assessing the users? We have got to stop looking at our screens and letting a few bare the load. We must move as a group in a direction accomplishing things as we go.

Tnx fer the disk space Steve, Federal Way

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